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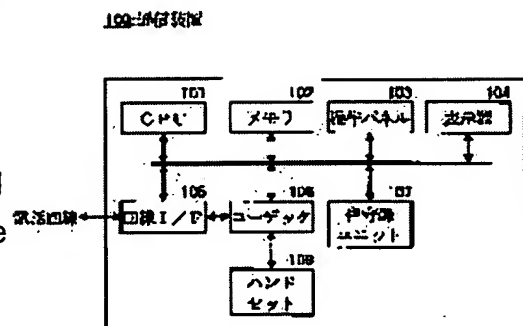
KENMOCHI TOSHIO

(54) COMMUNICATIONS EQUIPMENT

(57)Abstract:

PROBLEM TO BE SOLVED: To provide communications equipment, capable of recording the message of a caller, even when a transfer opposite party is busy (using a telephone) or is in a place, where radio waves cannot reach, in the communications equipment housing a plurality of lines.

SOLUTION: This communications equipment is provided with: a means for detecting specified signals, such as the tone signals of DTMF or the like, from the caller at incoming call transfer; and a means for stopping transfer and storing the message of an opposite party in the communications equipment, by using the message recording function of the communications equipment in the case of receiving the specified signals.



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CLAIMS

[Claim(s)]

[Claim 1] In the communication device which is connected to the telephone line which holds two or more circuits, and has a timed-recording function At the time of a call redirection means to transmit arrival of the mail, a call redirection setting-out means to set up a transfer of; arrival, a circuit operating condition detection means to detect the operating condition of; circuit, a specific signal receiving means to receive the specific predetermined signal which; origination side transmitted, and; arrival The above-mentioned call redirection setting-out means has set up call redirection, and moreover, when the above-mentioned circuit operating condition detection means detects that it is an empty circuit, use an empty circuit and arrival of the mail is made to transmit to the destination set up for the above-mentioned call redirection means. At this time The communication device characterized by having the control means which a transfer of the arrival by the above-mentioned call redirection means is stopped [control means], and makes the above-mentioned timed-recording function of a communication device record a dispatch partner's message, and; if the above-mentioned specific signal receiving means detects the specific predetermined signal which the above-mentioned dispatch partner transmitted.

[Claim 2] It is the communication device which the above-mentioned specific signals are tone signals, such as DTMF, and is characterized by the above-mentioned specific signal receiving means being a filtering means of an input signal in claim 1.

[Claim 3] It is the communication device characterized by being a means for the above-mentioned circuit operating condition detection means to memorize an equipment operating condition inside in claim 1, and to refer to this memorized data.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the communication device which executes by proxy and records a message, when the communication device connected to multiple-lines, such as ISDN, is started, arrival of the mail is transmitted using the circuit which is vacant especially at the time of arrival of the mail and this destination cannot receive a message in a busy etc.

[0002]

[Description of the Prior Art] Digitization of the telephone line is progressing with development of an information communication link in recent years. This digital channel is a line network called ISDN, and is a circuit which can hold a multiple-line logically and moreover has the descriptions, like an information rate is quick compared with the conventional analog public line.

[0003] Moreover, by the Internet boom of late, installation of the personal computer to ordinary homes progressed, the demand of a simultaneous activity with personal computer communications and a telephone and the demand of the improvement in a rate of personal computer communications became high, and the spread of ISDN to ordinary homes has spread quickly.

[0004] The gestalt which connects a telephone and a personal computer to a circuit in installation of ISDN in ordinary homes using the equipment called TA (terminal adopter) is in use. In this case, the common telephone for analog public lines is connected as telephone used.

[0005] Moreover, recently, the digital telephone with a timed-recording function by which direct continuation is carried out to an ISDN network has also appeared.

[0006]

[Problem(s) to be Solved by the Invention] Here, call redirection is explained.

[0007] "Call redirection" is actuation of transmitting the call which received a message to other partners, and there are two kinds such as a call transfer and message transfer as the above-mentioned transfer.

[0008] A "call transfer" is a transfer which transmits arrival of the mail to real time as it is, is a transfer which carries out direct communication (conversation) to an origination side in the destination, "message transfer" once receives arrival of the mail, records an addresser's message, cuts a call, sends to the destination anew, and sends the recorded message to the destination.

[0009] In order to realize the above-mentioned call transfer by the conventional analog network, it is necessary to use the call forwarding service of the charge by the side of a line network.

[0010] Moreover, since the above-mentioned message transfer is a transfer currently performed with the answering machine of a general analog network and the circuit which can be used is single-line, the message which can be transmitted has the problem that it is restricted to an are recording message.

[0011] On the other hand, since a multiple-line can be held in ISDN, a message can be received and a terminal unit can perform the call transfer of transmitting the arrival, by the 2nd circuit which is vacant by the 1st circuit.

[0012] By the above-mentioned TA connection, as for the call transfer in this ISDN, the TA itself has a transfer facility, and the telephone itself has this function in digital telephone connection. Although the

call redirection function is prepared as service by the side of a network, if TA or the digital telephone which has a transfer facility is prepared for pay also with ISDN, it is not necessary to join the service by the side of a network, and is economical.

[0013] When using the call redirection in this ISDN terminal, a cellular-phone number may be set up as the destination. Recently, the cellular phone became cheap, it has spread explosively from the convenience, and the case where a cellular phone is specified as the above-mentioned destination has increased more.

[0014] Thus, since the wireless section intervenes unlike the transfer to the telephone of a general cable when a cellular phone is made into the destination, depending on the situation of an electric wave, a message may be unable to be received in except during the activity of a telephone. Usually, if a case, i.e., fixed time amount arrival, is not carried out, the message which shows the purport which cannot receive a message in an electric-wave situation etc., and which cannot be used will be passed. At this time, since the above-mentioned message is heard and a partner cannot receive a message, a telephone must be hung up and an addresser has the problem that a message to tell does not reach a partner.

[0015] In the communication device which holds two or more circuits, this invention aims at offering the communication device which can record an addresser's message, even when a transfer partner is a busy (under a telephone activity) or is in the location which an electric wave does not reach.

[0016]

[Means for Solving the Problem] When it has a means to detect specific signals, such as tone signals, such as DTMF, and this specific signal is received from an addresser at the time of call redirection, this invention suspends a transfer and establishes a means to memorize a partner's message to a communication device by the message sound recording function of a communication device.

[0017]

[The gestalt and example] of implementation of invention Drawing 1 is the block diagram showing the outline configuration of the communication device 100 which is one example of this invention.

[0018] CPU101 for a communication device 100 to control a system and the memory 102 which memorizes a program and data, The control panel 103 which inputs the telephone number etc., and the drop 104 which displays the situation of the telephone number or equipment, The interface 105 which is an interface with a circuit with two or more channels, and is equivalent to ISO layer 1 interface in the case of ISDN, It connects with a hand set 108 and has the timed-recording unit 107 for recording voice for a sign / codec (in the case of ISDN PCM codec) 106 to decrypt, an absence message, a call message, etc., and a hand set 108.

[0019] Next, actuation of a communication device 100 is explained.

[0020] Drawing 2 is a flow chart which shows actuation of a communication device 100.

[0021] First, if it detects whether there is any arrival of the mail (step1) and there is arrival of the mail, it will be confirmed whether the transfer is set up (step2). Setting out of this transfer is the control panel 103 of a communication device 100, and a user sets it up beforehand and you may make it prepare a transfer carbon button etc. in a control panel 103. Here, if transfer directions are not carried out, it will shift to the usual arrival (step10). However, when housesitting setting out is carried out and a fixed period call cannot be received, it may change to the answering machine of step16 here.

[0022] Next, each condition in the above-mentioned example is explained according to an individual.

[0023] When the transfer is directed by step2 shown in drawing 2 [when all circuits other than the circuit of which condition 1:arrival was done are using it], The empty situation of the held multiple-line is investigated (step3). When the empty situation of other B channels which are channels other than a message channel (B channel) when it is ISDN is investigated and the circuit (the 2nd circuit) of B channel besides the above is closed A message-sending function (contained in the above-mentioned timed-recording unit 107 in many cases) is used. A circuit is used for an addresser, a sink (step12) and a timed-recording sound function are started for the message which shows the purport which cannot be transmitted (step16), and an addresser's message is recorded (step17).

[0024] In addition, hold circuits are two circuits, and Above ISDN is called a common name (trademark) INS 64, has in a call two channels (two B channels, B1 channel and B-2 channel) and the control

channel (D channel) which performs control of a call in this case, and consists of channels of 2B+D here.

[0025] Drawing 3 is drawing showing a series of processing sequences in the case of using the ISDN (INS64) circuit in the above-mentioned example.

[0026] The example shown in drawing 3 is an example of a carrier beam case about the 1st circuit (for example, B1 channel) to arrival, when the 2nd circuit (for example, B-2 channel) is using it.

[0027] When it is ISDN, the control channel called D channel is used for signals, such as arrival of the mail, they are carried out, and a call setup signal is received from the 1st circuit through above-mentioned D channel.

[0028] In the state of [1] the above, since a communication device 100 can receive a message, it returns the call signal which returns call setup reception to D channel, and the ring back of an analog telephone deserves continuously. Next, the reply signal of an analog telephone which corresponds off-hook is taken out, a response acknowledge signal is received from a partner, and arrival of the mail is completed. In a communication device 100, the operating condition of one more circuit (the 2nd circuit) is checked here. The flag with which it is got blocked, for example, the specification situation of a body is expressed is formed, and the activity situation of the resource of a communication device 100 is supervised through this flag. the message (for example, -- "-- it is now made absence.) to which the sound recording of a message is urged since call origination is impossible for the 2nd circuit and it cannot transmit to a communications partner under this monitor using a message-sending function, if one more circuit (the 2nd circuit) is judged to be under an activity and the transfer is moreover directed with the above-mentioned transfer directions setting-out means The message of please give me a message" is sent after dial tone, and the sound recording of a partner's message applied by the 1st circuit is started.

[0029] [-- the message (for example, -- "-- it transmits.) which shows that a circuit besides condition 2: can be used, reading appearance of the telephone number of the destination beforehand set as the body of a communication device 100 if it is judged by step3 shown in] drawing 2 when it can transmit that other circuits are vacant is carried out, and it is under transfer using a message-sending function Please wait for a while then. A message, such as please push #1", is outputted to stop a transfer (step5).

[0030] next, if call origination is carried out with the telephone number which carried out reading appearance by step4 to the vacant channel (step6), it confirms whether the specific signal beforehand decided by the dispatch partner was received (step7) and the above-mentioned specific signal is not received When it judges whether the transfer partner answered (arrival of the mail) (step8 (judging by detecting a partner's reply signal)) and a response is checked, during a transfer, in a message, the circuit of a stop (step9) and the source and the circuit of the destination are connected (step10), and a call is started.

[0031] In addition, the above-mentioned specific signals are tone signals (if a message is followed during the above-mentioned transfer, it will be the DTMF sound of "#1"), such as DTMF usually used by telephone, etc.

[0032] Drawing 4 is the sequence diagram showing the actuation which can be set in this case.

[0033] Since the arrival (it operates to message sending during a transfer from call setup reception of drawing 4 R> 4) from the 1st channel shown in drawing 4 is the same as that of the above-mentioned condition 1, it omits the explanation. When the arrival of the 1st circuit is checked, a transfer is directed and other circuits (the 2nd circuit) are moreover vacant (this decision) A call setup signal is taken out to the 2nd circuit using the control channel performed with the means shown in the state of [1] the above. The transfer partner of the 2nd circuit can receive a message, and the call setup reception signal and call signal which moreover show that it is under call are received. The reply signal which shows that the transfer partner of the 2nd circuit appeared in the telephone is received, finally the response acknowledge signal of the purport that the response was received is taken out to a control channel, and the call origination/call in to the 2nd circuit are established.

[0034] Then, a message is stopped during a transfer. It may be made to perform a halt of a message in the phase which could be made to carry out in the phase where a transfer partner can receive a call, for

example, received call setup reception during this transfer.

[0035] Here, in a communication device 100, the 1st circuit and 2nd circuit are connected in circuit interface section 105 grade, and the 1st circuit partner and the 2nd circuit partner start a direct call.

[0036] Although a circuit besides [condition 3: can be used and being transmitted, when the destination is busy, other circuits (the 2nd circuit) are vacant in step6 of] drawing 2, moreover, when the transfer is directed, the message which tells an arrival-of-the-mail partner about using an attempt and a message-sending function and transmitting call origination to a vacant channel is sent (step5), and call origination (step6) is carried out to the destination.

[0037] however, when this transfer partner is busy The partner of the 1st circuit is told about a busy (transmitting for example, a busy tone signal). After that by step7 If reception of a specific signal is detected from a dispatch partner, a message will be stopped during a transfer (step13), a transfer will be stopped (step14 (releasing a circuit)), a timed-recording sound function will be started (step16), and a message will be recorded (step17).

[0038] In addition, when detecting the above-mentioned specific signal, filtering processing is carried out and the filter corresponding to a specific signal detects a dispatch partner's line signal (message channel signal on the 1st circuit).

[0039] Drawing 5 is the sequence diagram showing the actuation which can be set in this case.

[0040] Since the arrival from the 1st channel shown in drawing 4 is the same as that of the above-mentioned conditions 1 and 2, it omits the explanation. The arrival of the 1st circuit is checked, a transfer is directed, and moreover, when other circuits (the 2nd circuit) are vacant (the means which showed this decision in the state of [1] the above is *****), a call setup signal is taken out to the 2nd circuit using a control channel.

[0041] Here, if the transfer partner of the 2nd circuit is [be / telephone / it / under activity] impossible for arrival of the mail, a release signal will be received through a control channel. By this, it judges with a transfer partner being busy, and the busy ton which tells a stop and a busy for a message during the transfer to the dispatch partner of the 1st circuit is transmitted. Here, if a specific signal is detected from a dispatch partner, a transfer partner will be busy and the transfer termination message which tells the purport whose transfer is impossible will be transmitted. Next, a timed-recording sound function is started and a message is recorded.

[0042] By step6 shown in drawing 2 [when the destination cannot answer, although a circuit besides condition 4: can be used and being transmitted], other circuits are vacant, and moreover, when the transfer is directed, the message which tells using an attempt and a message-sending function and transmitting call origination to a vacant channel is sent to an arrival-of-the-mail partner. However, when the destination is in the location where an electric wave does not pass with a cellular phone etc., the message flows from a fixed station.

[0043] In a communication device 100, the message from this fixed station is passed as the dispatch partner of the 1st circuit. Actually, the 1st circuit and 2nd circuit are connected and actuation of passing the message from the 2nd circuit to the 1st circuit as it is is performed. The connection timing of this 1st circuit and 2nd circuit mentions later.

[0044] Then, by step7, if reception of a specific signal is detected from a dispatch partner, a message will be stopped during a transfer (step13), a transfer will be stopped (step14), a transfer termination message will be transmitted (step15), a timed-recording sound function will be started (step16), and a message will be recorded (step17).

[0045] Drawing 6 is drawing showing the sequence which can be set in this case.

[0046] Since the arrival from the 1st channel shown in drawing 6 is the same as that of the above-mentioned conditions 1 and 2, it omits the explanation. The arrival of the 1st circuit is checked, a transfer is directed, and when it is moreover judged that other circuits (the 2nd circuit) are vacant (the means shown in the state of [1] the above makes this judgment), a call setup signal is taken out to the 2nd circuit using a control channel.

[0047] here -- a cellular phone -- arrival of the mail -- by the case where the transfer partner of the 2nd circuit is in a location out of range etc., if arrival of the mail is impossible, a trace signal will be received

from a fixed station. The 1st circuit (1st data circuit) and 2nd circuit (2nd data circuit) are connected in order to tell the partner on the 1st circuit the message from this fixed station, at the same time a communication device 100 connects a call (data) channel to a circuit and it waits for the message from a fixed station with this signal. In this case, a halt (step13) of a message is also performed to this timing during the transfer shown in drawing 2 .

[0048] Next, the activity improper message which tells the purport which cannot use the telephone of the destination from a fixed station is received, this is turned up with a communication device 100, and it transmits to the call origination partner on the 1st circuit. here -- the specific signal reception from a dispatch partner -- detecting (step7) -- the 1st connected circuit and 2nd connected circuit are cut, a disconnect signal is transmitted to the 2nd circuit, and the transfer to the 2nd circuit is stopped (step14). Next, a transfer termination and the transfer termination message which stimulates the sound recording of a message are transmitted (step15), a timed-recording sound function is started (step16), and a message is recorded (step17).

[0049]

[Effect of the Invention] In the communication device which holds two or more circuits according to this invention the destination a busy or when a call in cannot be carried out Since a means to have stopped a transfer, to have started the housesitting message sound recording function of a communication device, and to record a call origination partner's message in the body of a communication device was established Since an addresser's call origination is not made useless, the effectiveness that a calling party's message can be recorded certainly is done so and an addresser can choose the message sound recording to a communication device even when a transfer is not completed A message can be recorded of an addresser's volition and the effectiveness that a useless message is not recorded is done so.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the block diagram showing the outline configuration of the communication device 100 which is one example of this invention.

[Drawing 2] It is the flow chart which shows actuation of a communication device 100.

[Drawing 3] In the above-mentioned example, it is drawing showing a series of processing sequences in the case of using the ISDN (INS64) circuit.

[Drawing 4] It is the sequence diagram showing the actuation in the above-mentioned example.

[Drawing 5] It is the sequence diagram showing the actuation in the above-mentioned example.

[Drawing 6] It is the sequence diagram showing the actuation in the above-mentioned example.

[Description of Notations]

100 -- Communication device,

101 -- CPU,

102 -- Memory,

103 -- Control panel

104 -- Drop,

105 -- Interface,

106 -- Codec,

107 -- Timed-recording unit,

108 -- Hand set.

[Translation done.]

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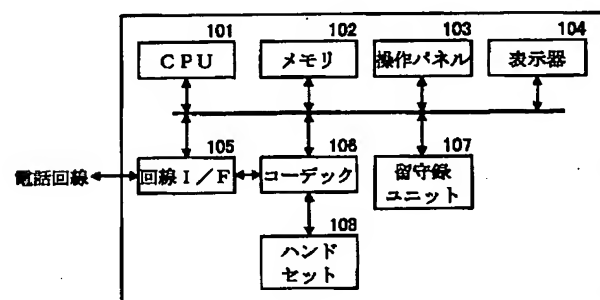
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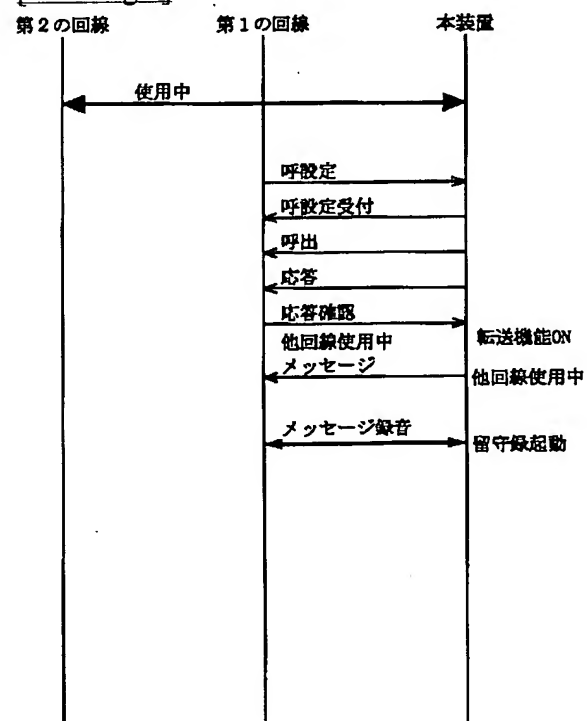
DRAWINGS

[Drawing 1]

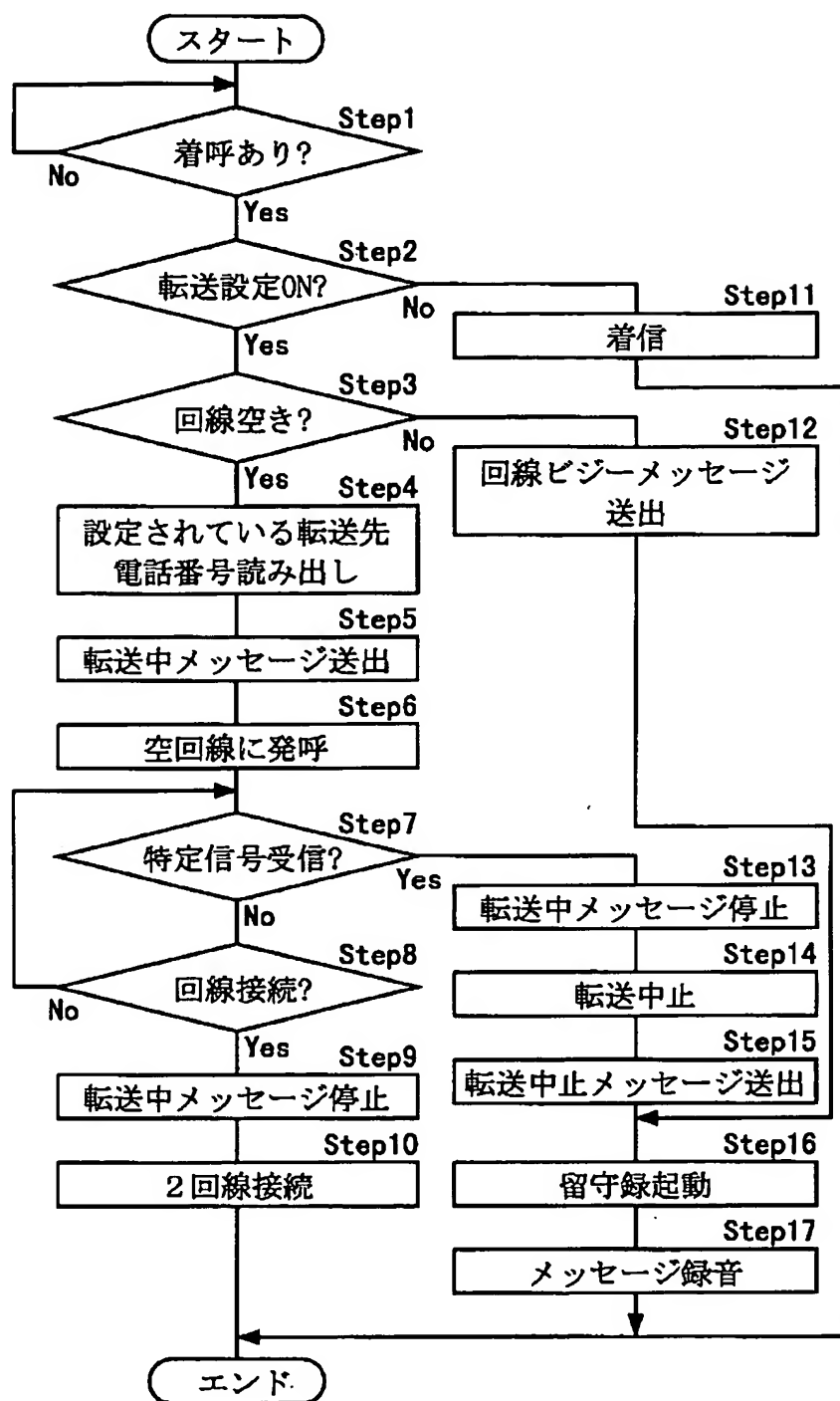
100: 通信装置



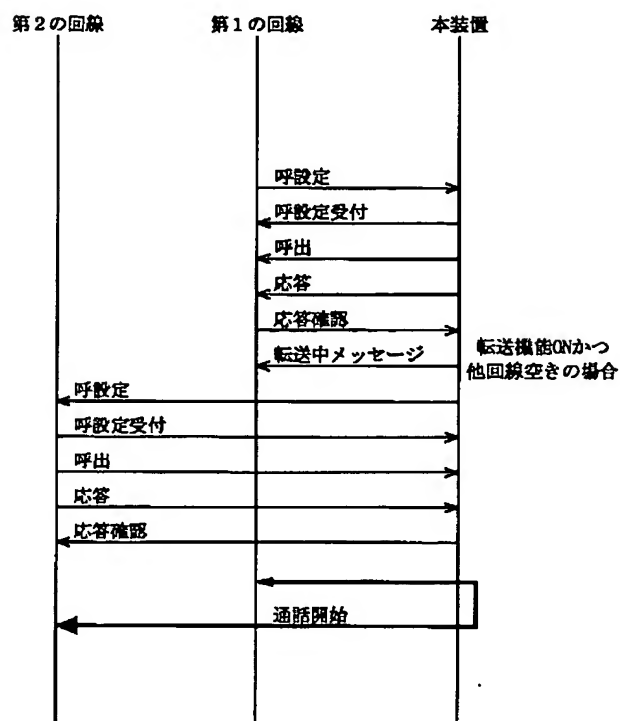
[Drawing 3]



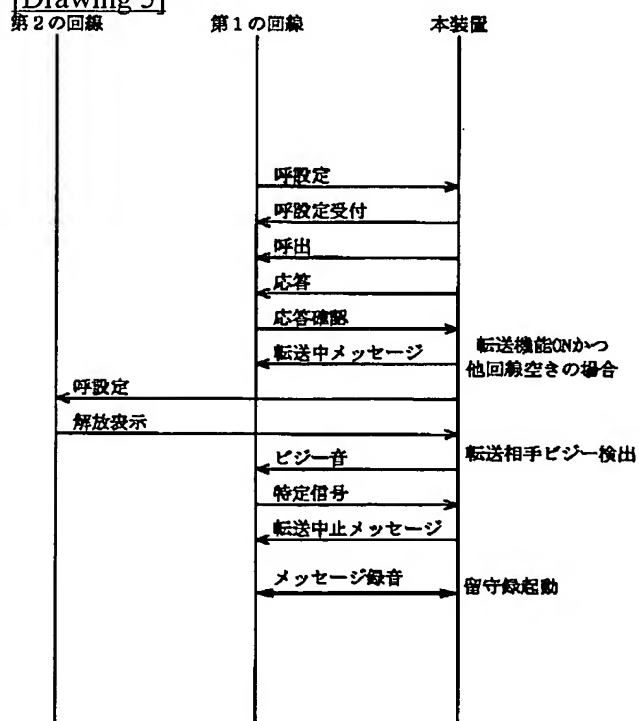
[Drawing 2]



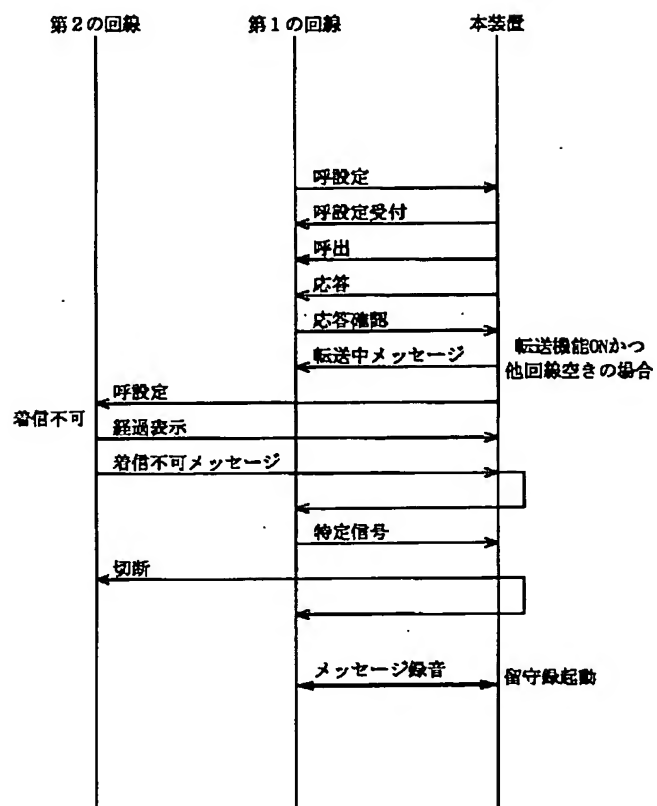
[Drawing 4]



[Drawing 5]



[Drawing 6]



[Translation done.]